

PRODINOCERAS AND A SUMMARY OF MAMMALIAN FOSSILS OF SINKIANG

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Recently the writer received some mammalian teeth collected by Mr. H. C. Wu, petroleum geologist working in Turfan Basin, Sinkiang Autonomous region. It is of considerable interest that these teeth belong to a primitive unitathere close to *Prodinoceras martyr* originally described by Matthew and Granger from the Upper Paleocene Gashato Formation of Mongolia. These fossils represent the first occurrence of Paleocene mammal in China as well as in whole Asia outside Mongolia.

The teeth were preserved in some sandstones composed of clean white coarse grained sands probably of lacustrine origin. The preservation of fossils is rather good though damaged when removed from the rocks in the field.

The writer is indebted to Miss H. C. Hu for making the drawings.

Prodinoceras turfanensis sp. nov.

Type—holotype, fragment of maxilla with P^2 , P^4 , M^{1-2} (V. 2464); Paratype, part of upper jaw with the second and third molars (V. 2465).

Locality—Between Taitsutsen and Bakan, Turfan Basin, Sinkiang.

Geological Age—Late Paleocene.

Diagnosis—A primitive unitathere slightly smaller than *P. martyr*. Upper teeth as in latter species, except that P^2 unbasined, protocone with a weakly developed crest but not quite united to paracone; P^4 shorter antero-posteriorly and more quadratic lingually. Molars with comparatively smaller hypocone, cingula very weak or absent on labial side.

Description—The second premolar, unlike the others, is from the left side and with a piece of palate adhering to it. It is clearly shown that the ectoloph is set obliquely to the upper cheek teeth row at an angle of about 45 degrees as in the other forms of the earliest unitatheres. The ectoloph consists of two cusps, the metacone is well differentiated but weaker and lower than the paracone. The protocone is low and connected to the ectoloph by a single anterior crest united to it at the base and there is a minute accessory cusp next to the protocone. In general this tooth is more like the case seen in the corresponding tooth of *Probathyopsis*.

The third premolar is missing. The last premolar is a well preserved unworn tooth. It is 13 mm long, 15.5 mm wide and rectiquadrangular in outline. Both the protoconule and metaconule are indicated, the former being more distinct. The cingula are nearly complete on all sides. This tooth is similar to that of *P. martyr*, but its general outline is more like that of *Mongolotherium plaigradum* than of the Gashato form.

As to the first upper molar only the lingual half is preserved in the holotype. It is more slender and narrower than those of *P. martyr*. The hypocone is smaller and more spine-like. There is also a minute accessory cusp on the anterior slope of protocone slightly above the cingular border as is shown in the figure of the specimen described by Matthew and Granger (1929, p. 9).

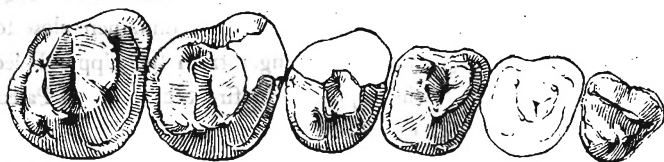


Fig. 1. *Prodinoceras turfanensis* sp. nov.

Right upper cheek teeth, crown view

P² reversed from left side

M²—3 from paratype (V. 2465)

Natural size

The crown of the second molar is broken on the type maxilla, but it is well shown on the paratype. It is nearly identical with the corresponding tooth in the type of the Mongolian form, except that the hypocone is smaller and the cingula are not continuous on the external side.

The last upper molar is perfectly preserved on the paratype. It is 20 mm long, 21 mm wide. It differs from that of *P. martyr* in that the hypocone is smaller, more knob-like, and slightly more externally located. The cingula are weak posteriorly and entirely lacking on the external side.

Comparison—From the above description it is evident that the untathere from Turfan Basin of Sinkiang is very close to that of Gashato. But the teeth from Sinkiang as a whole are somewhat more primitive. They differ from those of the Mongolian specimen in some detail. It is slightly smaller in size, with P² unbasined and has less developed hypocone on the molars and weaker cingula. These differences may all be considered to be of no great importance or not great enough for a specific distinction, but it still seems to be advisable to have them separated at present.

A Summary of Fossil Mammals known from Sinkiang

Nothing was known regarding the mammalian history of Sinkiang until a few years ago. Today, however, we have already gained a first glimpse of it. At least the

following horizons ranging through most of the Tertiary with characteristic mammalian fossils are known from this region. They are summarized as follows:

Early Pleistocene

Equus sanmeniensis of Ulanbulan, Dzungaria.

Correlative: Nihowan (Villafranchian), North China.

Pliocene

1. *Hipparion* fauna (*Hipparion*, *Chilotherium*, giraffid, cervid, etc.) of Manas District; Early Pliocene.
2. Locality with *Chilotherium* or *Aceratherium*, at Ulengu, District of Ishiblak, Dzungaria; Early Pliocene or Late Miocene.
3. Locality with antelope remains, Ulhu District; Pliocene.

Correlatives: *Hipparion* Fauna of North China (Poate, Yushe, etc.).

Miocene

Localities with *Serridentinus* and *Stegolophodon* respectively, probably of Dzungaria Basin; Miocene or slightly later.

Correlative: Probably Tungur, Inner Mongolia.

Oligocene

1. Locality of Hami Basin with *Indricotherium* cf. *grangeri*, a large form with very hypsodont molar, probably a new species of Late Oligocene or Early Miocene age.
2. Locality with a very primitive type of *Bothriodon*, South Anshihai, Southern part of Dzungaria; Early Oligocene.
3. Locality with a carnassial of a primitive felid, Dzungaria; probably Oligocene.

Possible correlatives: *Indricotherium* beds of Inner Mongolia (1), Chuching, Yunnan (2), and Ardyn Obo, Mongolia (3).

Eocene

1. Locality with titanotheres (undescribed), Yenmachuan ("Wild Horse Spring"); Latest Eocene or still later.
2. Locality with *Eudinoceras* sp. and *Lophialetes expeditus*; Luliang, northwestern part of Dzungaria; Late Eocene.

Correlative: Irdin Manha, Inner Mongolia; Lushih, Honan.

Paleocene

Prodinoceras turfanensis Chow; Turfan Basin; Late Paleocene.

Correlative: Gashato, Mongolia.

Nearly all the above listed mammals are represented only by very few fragmentary remains; but in general they are characteristic of the stratigraphical horizons that they indicate. Preliminary description of these fossils are found in a series of short notes by the writer of the present paper and his collaborators (Chow, 1956; 1957; 1958; 1959).

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